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10/617,559	07/11/2003	Frank van Diggelen	GLBL/027	4310

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EXAMINER	
BEHNCKE, CHRISTINE M	
ART UNIT	**PAPER NUMBER**
3661	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/617,559	DIGGELEN, FRANK VAN	
	Examiner	Art Unit	
	Christine M. Behncke	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6-14 and 16-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,9-14 and 19-24* is/are rejected.

7)☒ Claim(s) *6-8 and 16-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *11 July 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to the Amendments and Remarks filed 11 January 2006, in which claims 1-4, 6-14 and 16-24 were presented for examination.

Response to Arguments

2. Applicant's arguments filed 11 January 2006 have been fully considered but they are not persuasive. Applicant contends that the applied reference Martikka does not claimed elements directed to forming Doppler residuals and relating the Doppler residuals to a change in initial position. The Examiner respectfully disagrees. The Doppler residuals are formed from the difference between a measured Doppler measurement and a predicted Doppler measurement, page 13 lines 5-7 of the present specification. Martikka discloses receiving preliminary Doppler measurements and estimating a preliminary position based on the receiver measurements (pseudo-distances, Figure 1) and determining an error or offset between the Doppler measurements received to form an initial position and the measurements received at a second time period (Figure 1). Martikka further discloses using this error/offset to update the initial position (Column 5, line 62-Column 6, line 10).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Martikka, US Patent No. 6,650,282.

4. (**Claim 1**) Martikka discloses a method of locating position of a satellite signal receiver, comprising: determining a Doppler measurement for each of a plurality of satellite signals relative to the satellite signal receiver at a first time (figure 2, Column 2, lines 12-19 and 28-44); computing an initial position of the satellite signal receiver using the Doppler measurement for each of the plurality of satellite signals (Column 2, lines 34-41); forming Doppler residuals using the initial position and the Doppler measurements for each of the plurality of satellite signals (Column 2, lines 34-48 and 58-64); relating the Doppler residuals to a change in the initial position (Column 2, lines 58-64 and figure 1); and computing an update of the initial position (figure 5).

5. (**Claim 2**) Martikka further discloses wherein the position is a first fix of position for the satellite signal receiver (Column 2, lines 12-27 and line 65-Column 3, line 8).

6. (**Claim 3**) Martikka further discloses wherein each of the plurality of satellite signals is associated with a predefined reference frequency (Column 1, lines 18-20 and Column 5, lines 26-29).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martikka in view of Krasner, US Patent Application Publication 2004/0203865.

8. (**Claim 4**) Martikka discloses the method of locating the position of a satellite receiver and further discloses wherein the plurality of satellite signals could comprise a global positioning system (GPS) (Column 1, lines 10-13). Martikka does not disclose that the satellite signal could be a Glonass or Galileo system signal. However, Krasner teaches that it would be obvious to adapt the previous methods to the Russian Glonass and/or the European Galileo systems ([0116]). It would have been obvious to one of ordinary skill in the navigational art at the time of the invention to combine the method of Martikka with the teachings of Krasner because, as Krasner teaches, substantially all the circuitry and algorithms as applied to the US GPS system would be applicable to the different systems while broadening the consumer market.

9. (**Claim 9**) Martikka discloses the method previously applied to claim 1, but does not disclose computing a frequency error. However, Krasner teaches computing a frequency error associated with an oscillator of the satellite signal receiver using the at least one Doppler measurement for each of a plurality of satellite signals ([0056]-[0058]). It would have been obvious to one of ordinary skill in the navigational art at the time of the invention to combine the method of Martikka with the teachings of Krasner because as Krasner suggests, the calculation of the frequency error of the oscillator can

be compensated for and used to increase the accuracy of the signal receiver position calculation.

Claim Rejections - 35 USC § 103

10. **Claim 10** is rejected under 35 U.S.C. 103(a) as being unpatentable over Martikka in view of Chenebault et al., US Patent No. 6,181,275.

Martikka discloses the method previously discussed regarding claim 1. Martikka does not disclose computing the velocity of the satellite signal receiver using the Doppler measurements. However, Chenebault et al. teaches locating the position of a satellite signal receiver by determining a Doppler measurement for each plurality of satellite signals received; computing a position of the satellite signal receiver using the Doppler measurements; and computing the velocity of the satellite signal receiver using the Doppler measurement for each of a plurality of satellite signals (Column 3, lines 3-20). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the method of Martikka with the teachings of Chenebault et al. because as Chenebault et al. teaches computing the velocity of the satellite signal receiver improves the accuracy of the position calculation, improving the position resolution (Column 4, lines 1-19).

Claim Rejections - 35 USC § 103

11. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 11-14, 19-21, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martikka in view of Sheynblat et al., US Patent No. 6,597,311.

12. (**Claim 11**) Martikka discloses a method of locating position of a satellite signal receiver, comprising: determining at least one pseudorange between the satellite signal receiver and a respective at least one satellite (pseudo-distance, Column 2, lines 12-27); determining at least one Doppler measurement for a respective at least one satellite signal relative to the satellite signal receiver (Doppler shift, Column 2, lines 12-19 and 50-56); computing an initial position of the satellite signal receiver using the at least one pseudorange and the at least one Doppler measurement (Column 2, lines 12-27, 34-41 and 50-56); forming Doppler residuals using the initial position and the at least one Doppler measurement (Column 2, lines 34-48 and 58-64); relating the Doppler residuals to a change in the initial position and computing an update of the initial position (Column 2, lines 58-64 and Figures 1 and 5). Martikka does not disclose forming pseudorange residuals. However, Sheynblat et al. teaches forming pseudorange residuals using an initial position and an at least one pseudorange (Column 5, lines 30-51) and relating the pseudorange residuals to a change in the initial position (Column 6, lines 1-11)

13. (**Claim 19**) Sheynblat et al. further teaches wherein the at least one pseudorange is a sub-millisecond pseudorange (Column 6, lines 1-11).

14. (**Claim 23**) Sheynblat et al. further teaches computing a time error associated with a clock of the satellite signal receiver using the at least one Doppler measurement and the at least one pseudorange (Column 2, lines 42-52).

It would have been obvious to one of ordinary skill in the electronic and navigational art at the time of the invention to combine the method of Martikka with the teachings of Sheynblat et al. because as Sheynblat et al. suggests the determination of the pseudorange and time errors between the predicted and measured Doppler shifts and pseudoranges to correct the internal clock bias estimate, therefore increasing the accuracy of the signal receiver position calculation (Column 2, lines 42-52).

15. (**Claim 12**) Martikka further discloses wherein the at least one satellite signal is respectively transmitted by the at least one satellite (Column 5, lines 26-29).

16. (**Claim 13**) Martikka further discloses wherein that at least one satellite signal is transmitted by a respective at least one additional satellite (Column 5, lines 26-29 and Column 3, lines 34-38).

17. (**Claim 14**) Martikka further discloses wherein the position is a two-dimensional position comprising x and y coordinates in a horizontal plane (Column 1, liens 28-34).

18. (**Claim 20**) Martikka in view of Sheynblat et al. teaches the method previously discussed regarding claim 11, wherein Martikka discloses computing an initial position of the satellite signal receiver using the at least one Doppler measurement (Column 2, lines 12-27, 34-41 and 50-56) but does not disclose forming pseudorange residuals. However, Sheynblat et al. teaches computing an integer millisecond portion of the at least one pseudorange using the initial position (Column 2, lines 42-52); forming pseudorange residuals using the at least one pseudorange and the initial position (Column 5, lines 30-51); and computing an update of the initial position (Column 6, lines 1-11). It would have been obvious to one of ordinary skill in the electronic and

navigational art at the time of the invention to combine the method of Martikka with the teachings of Sheynblat et al. because as Sheynblat et al. suggests the determination of the pseudorange and time errors between the predicted and measured Doppler shifts and pseudoranges to correct the internal clock bias estimate, therefore increasing the accuracy of the signal receiver position calculation (Column 2, lines 42-52).

19. (**Claim 21**) Martikka further discloses wherein the position is a first fix of position for the satellite signal receiver (Column 2, lines 12-27 and line 65-Column 3, line 8).

20. (**Claim 24**) Martikka in view of Sheynblat et al. teaches the method previously discussed regarding claim 11, wherein Martikka does not disclose computing the velocity of the satellite signal receiver using at least one Doppler measurement and the at least one pseudorange. However, Sheynblat et al. teaches computing the velocity of the satellite signal receiver using the at least one Doppler measurement and the at least one pseudorange (Column 6, lines 39-44 and Column 5, lines 30-45). It would have been obvious to one of ordinary skill in the electrical and navigational art to combine the method of Martikka with the teachings of Sheynblat et al. because, as Sheynblat et al. suggests computing the velocity of the receiver and comparing it to the known velocity, as Sheynblat et al. does, can be used to minimize the velocity error and therefore increase the accuracy of the position estimation (Column 6, lines 35-52).

Claim Rejections - 35 USC § 103

21. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Martikka in view of Sheynblat et al., as applied to claim 11 above, and further in view of Krasner, US Patent Application Publication 2004/0203865.

Neither Martikka nor Sheynblat et al. disclose computing a frequency error. However, Krasner teaches computing a frequency error associated with an oscillator of the satellite signal receiver using the at least one Doppler measurement and the at least one pseudorange ([0056]-[0058]). It would have been obvious to one of ordinary skill in the navigational art at the time of the invention to combine the method of Martikka in view of Sheynblat et al. with the teachings of Krasner because as Krasner suggests, the calculation of the frequency error of the oscillator can be compensated for and used to increase the accuracy of the signal receiver position calculation.

Allowable Subject Matter

22. **Claims 6-8 and 16-18** are objected to as being dependent upon a rejected base claim and are at present considered to overcome the prior art of record if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christine M. Behncke whose telephone number is (571)

272-8103. The examiner can normally be reached on Monday - Friday 8:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas G. Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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